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# Unmanned Aircraft Systems (UAS) Training

Report on the Drone Training in Cuba



World Food  
Programme

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# Introduction



Over the past few years, the use of unmanned aircraft systems (UAS) or drones in Latin America has been growing at a fast pace. The applications of this technology in the areas of emergency preparedness and response as well as risk reduction have sparked a huge amount of interest from humanitarian responders and national disaster management agencies (NDMAs).

World Food Programme (WFP), as lead of the Emergency Telecommunications Cluster (ETC), organized a drone / UAS training in Cuba in November 2019. This was the very first UAS training conducted in this country. It provided a platform for 35 participants from different government institutions to learn about UAS technology, but also opened a space to identify and prioritize key gaps in humanitarian implementation of this technology in-country.

For this training, WFP customized its UAS training package to meet specific local requirements in the areas of UAS operations, including: basic drone pilot training (Let's FLY), photogrammetry and mapping (Let's MAP) and Search & Rescue. Thanks to this approach, the participants got a full overview of drone flight and mapping operations and capacities, but also worked together to develop ideas and projects for the country.

This report outlines key figures and achievements as well as a way forward.

**This training was organized and supported by:**



# Training Overview

Between 5 and 8 November, WFP, supported by the Government of Belgium, Asociacion Profesional de Drones (APD) and local organizations, conducted a customized UAS training package. Government technicians from five agencies, including: Civil Defense, firefighters, GeoCuba, Xetid and Ministry of Interior attended this two-week learning event.



**6 ORGANISATIONS**

**35 PARTICIPANTS**

**85% MEN VS. 15% WOMEN**

## Participating organizations:

- Cuba Civil Defense;
- Cuba Firefighters;
- GeoCuba — Instituto de Hidrografía, Geodesia y Cartografía (Institute of Hydrography, Geodesy and Cartography);
- Ministry of Interior;
- WFP Cuba;
- Xetid — Empresa de Tecnologías de la Información para la Defensa Civil (Information Technology Company for Civil Defense).

## The UAS training customized for Cuba consisted of three modules:

### SEARCH & RESCUE



### LET'S FLY



### LET'S MAP



## SEARCH & RESCUE

The facilitators delivered theoretical sessions on:

- Search and Rescue (SAR) overview;
- Case studies and lessons-learnt, especially in the Latin American region;
- Safety procedures;

- Procedures and best practices for the integration of UAS technology into SAR operations.

## Let's FLY

Technology used for practical sessions:



**DJI MAVIC PRO**

**DJI PHANTOM 4**

**DJI INSPIRE 2**

During Let's FLY the participants received a hands-on training on the drone technology, including detailed introduction to mobile applications that enable handling of drones. Participants were able to get extra flight time during the Let's MAP, gaining in total approximately 10 hours of flight time.

## Let's MAP

During this course, the participants gained a solid understanding of photogrammetry and the processing of drone imagery into detailed 2D maps and 3D models. The instructors introduced a variety of software that can be used to process the images using Pix4D Mapper. The course provides a comparison of between Pix4D and other options in terms of their pricing, pros and cons as well as different outputs they produce.

# Training Details



**"Developing this workshop in our country has been a dream come true. Being able to show the different organizations the great possibilities that the use of drones in emergencies and development has for the country is a substantial step in achieving our objectives."**

**The organization of the course and the classes taught were very enjoyable and carried out by very good professionals who shared with us their passion for the use of drones."**

**Adhara Arencibia, WFP Cuba**

## UAS Technology

WFP has been developing the use of UAS in humanitarian sphere since 2017, including the coordination model, capacity building and support to WFP programmes and operations. This work with current examples from several countries was presented during the training. As WFP is looking at various aspects related to UAS—from air safety to data protection, the participants received a comprehensive overview of capacity, challenges and practical applications of this technology.

## Search & Rescue Applications

Search and Rescue (SAR) is the search for and provision of aid to people who are in distress or imminent danger. For the Cuba Civil Defense, this is an important application of the UAS technology and they look

forward to integrate it as soon as possible.

## Practical flight sessions

During this 4-day training, the participants received dedicated piloting time as part of the Let's FLY module, but also got extra practice during Search & Rescue, as well as Let's MAP components of the training , gaining in total approximately 12 flight hours. They learnt to operate multi-rotor systems— starting with a small Mavic Pro for practice and then progressing to Inspire 2, suitable for SAR and mapping operations. The objective of the course was to gain confidence in operating the drones for photo/videography and mapping operations, troubleshooting basic problems as well as learning all the associated mobile applications which allow for automation of the process. The instructors also explained mapping missions with using software available online.

***"Now, WFP must continue to support the Government in use of these unmanned aircrafts for the development of the country."***

**Adhara Arencibia, WFP Cuba**





*"The workshop was developed with a high degree of organization and professionalism of the event coordinators.*

*The personnel showed professionalism in the development of the workshop, the presentations were accessible with an understandable language, the technique used corresponded to the international requirements for the use of the unmanned aircrafts in situations of disasters."*

Msc Danai Rivera Garcia, Ministry of Civil Defense Cuba

### **UAS Task Force for Emergency Preparedness and Response**

During the training, the Cuba Civil Defense Department identified the need to create an inter-organizational working group that would carry forward the UAS efforts and follow up on areas of integration of the UAS technology identified by participants during the different sessions. This UAS Task Force will be lead by the Civil Defense—Disaster Risk Management Unit and will collaborate with other government entities, including GeoCuba, and the firefighters among others.

### **Next steps**

- WFP Drones team will continue engaging with the WFP Cuba Country Office and provide the necessary support in case of future UAS projects/activities.
- The participants were particularly interested in an advanced flight training and a practice program that allows them to continue to polish their skills (such training was conducted in September 2018 for Madagascar and Mozambique allowing South-South collaboration).
- All training materials will be shared with the participants.

**"This workshop allowed us to prepare and train specialists from different organizations and entities that have the mission of using these means in disaster situations."**

**Msc Danai Rivera Garcia, Ministry of Civil Defense Cuba**



# Conclusion

Cuba is the largest and most populated island in the Caribbean. Despite facing numerous natural disasters, it consistently experiences the lowest death tolls during hurricane season. This can be attributed to the country's emergency preparedness and capacity to respond to disasters.

The Department of Civil Defense has identified UAS technology as key for strengthening the country disaster response capacity and for this purpose has requested the technical support from WFP to build local capacity to utilize and integrate UAS technology in a safe and efficient manner into emergency preparedness and response operations.

The UAS training provided a platform to identify areas where UAS technology can be leveraged to assist ongoing activities, which were identified as follows:

1. UAS technology to support search and rescue

operations through the use of high-resolution aerial images and footage, thermal and infrared imagery that can complement and guide ground SAR operations.

2. Using UAS technology to capture aerial imagery that can be used to produce products for analysis and decision making (2D, 3D maps and models).

In addition to the workshop, WFP is also supporting the Cuban government through the donation of UAS equipment that will be prepositioned in country and managed by the Civil Defense for emergencies that may arise.



# Annex

## Training Agenda

SESSION	COURSE / MODULE	COURSE / MODULE	FACILITATOR(S)
<b>Tuesday, 5 November 2019</b>			
<b>Group 1</b>		<b>Group 2</b>	
1	Lets FLY—Theoretical	Search & Rescue—Theoretical	APD, WFP
2	Lets FLY— Practical	Search & Rescue—Practical	APD, WFP
3	Lets FLY— Practical	Search & Rescue—Practical	APD, WFP
<b>Wednesday, 6 November 2019</b>			
<b>Group 1</b>		<b>Group 2</b>	
1	Lets FLY—Theoretical	Lets FLY— Practical	APD, WFP
2	Lets FLY— Practical	Lets FLY— Practical	APD, WFP
3	Search & Rescue—Theoretical	Lets FLY— Practical	APD, WFP
4	Search & Rescue—Theoretical	Lets FLY— Practical	APD, WFP
<b>Thursday, 7 November 2019</b>			
<b>Group 1</b>		<b>Group 2</b>	
1	Lets MAP—Theoretical	Lets FLY—Theoretical	APD, WFP
2	Lets MAP— Practical	Lets FLY—Practical	APD, WFP
3	Lets MAP— Practical	Search & Rescue—Practical	APD, WFP
<b>Friday, 8 November 2019</b>			
<b>Group 1</b>		<b>Group 2</b>	
1	Lets FLY—Practical	Lets FLY—Theoretical	APD, WFP
2	Lets FLY—Practical	Curso Piloto Profesional de dron CPPD (Práctico)	APD, WFP
3	Search & Rescue— Practical	Lets FLY—Practical	APD, WFP
4	Search & Rescue— Practical	Search & Rescue—Practical	APD, WFP

# Acronyms

<b>APD</b>	Asociacion Profesional de Drones (Professional Drone Association)
<b>ETC</b>	Emergency Telecommunications Cluster
<b>NDMA</b>	national disaster management agency
<b>NGO</b>	non-governmental organization
<b>RBP</b>	Regional Bureau Panama
<b>SAR</b>	Search and Rescue
<b>UAS</b>	unmanned aircraft systems
<b>WFP</b>	World Food Programme

# Photo Credit

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